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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE February 2000	
BUDGET ACTIVITY 07 - Operational System Development				PE NUMBER AND TITLE 0305111F Weather Service				PROJECT 672738	
COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
672738 Weather Service	9,846	18,910	19,942	11,489	14,606	16,781	17,015	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

(U) **A. Mission Description**

This program provides for the modification, sustainment, and acquisition of meteorological and space environmental hardware and software supporting the observing and forecasting needs of worldwide Air Force and Army operations, as well as Special Operation Forces (SOF) and other government agencies. It provides fixed and transportable equipment supporting the Expeditionary Aerospace Force (EAF) concept with weather observing and forecasting capabilities at in-garrison and deployed locations. Efforts include: (a) Cloud Depiction and Forecast System II (CDFS II) replaces logistically unsupportable mainframe computers at the Air Force Weather Agency (AFWA), Offutt AFB, and upgrades satellite data processing, cloud depiction and forecasting weather support functions for operational commanders and classified national programs; (b) Global Theater Weather Analysis and Prediction System (GTWAPS) acquires theater weather models and associated hardware to improve the AFWA theater support capabilities; (c) Tactical Weather Radar (TWR) provides lightweight, portable Doppler weather radar to support deployed combat operations worldwide; (d) Space Weather Analysis and Forecast System (SWAFS) builds space environmental support and modernizes software capabilities to meet warfighter requirements; (e) Meteorological Operations Capability (MOC) Forecast System 21st Century (FS-21) provides user workstations capable of ingesting all sources of weather information to provide timely and precisely tailored weather products for the warfighter and supports the 'train as you fight' concept by assuring fixed and deployable systems are the same; (f) Weather Data Analysis (WDA) provides a fused infrastructure for the assimilation of advanced models, radar, lightning, and satellite data into a single user interface for the timely analysis and production of tailored weather products [In FY99 this project was named Satellite Data Handling System II (SDHS II). This name change provides consistency with the five core competency areas--see following paragraph.]; (g) MOC Observing System 21st Century (OS-21) provides a range of weather observing capabilities to include a fully automated capability for fixed and deployed locations and integrates both manual and remote systems and (h) Small Tactical Terminal (STT) provides worldwide tactical users with a survivable 'first-in' source of meteorological satellite data, processed by small portable terminals in forward areas of conflict [Funding aligned to PE 35111F in FY01. Prior year funding in PE 35160F, Defense Meteorological Satellite Program.]. Additionally, in FY99 in response to USAFE Combat Mission Needs Statement 98-008 generated during Operation Allied Force, the Target Scale Weather Forecast Model (TSWFM) was developed to provide Air Tasking Order planners the ability to anticipate and exploit weather for air operations by providing greater resolution and accuracy in weather forecasts.

(U) In FY00, Air Force Weather (AFW) programs are being aligned under the five core competency areas of Weather Data Collection, Analysis, Forecasting, Product Tailoring/Warfighter Applications, and Dissemination described in the AFW Mission Support Plan. Through this alignment, AFW will ensure an integrated and systems-oriented approach to program management decisions. Weather Data Collection will absorb TWR and MOC sensor program efforts in FY00 and beyond.

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(U) **A. Mission Description Continued**
 Analysis will continue the SDHS II effort as WDA and ensure the interoperability of the AFW processing infrastructure with users and data sources. Weather Forecasting will continue both GTWAPS and CDFS II and begin merging strategic and operational level forecasting for greater efficiency. Product Tailoring and Warfighter Applications will continue development of MOC FS-21 which is the cornerstone of AFW support to operational users. These consolidations and realignments are critical to AFW Re-Engineering and implementation of the CSAF-directed and approved AFW Strategic Plan.

(U) **FY 1999 (\$ in Thousands)**

(U) \$4,855	CDFS II: Continued development of cloud depiction and forecast software
(U) \$1,829	GTWAPS: Continued operational software development for incremental IOC's
(U) \$250	TWR: SPO support and continued development of system interfaces with Forecast and Analysis systems
(U) \$1,327	MOC FS-21: Prepare Milestones I/II/III documentation
(U) \$40	SDHS II: Initiated assessment of operational alternative study and preparation of Milestones I/II/III documentation
(U) \$845	SWAFS: Performed design and architecture study in preparation for Milestones I/II and possibly III and to accommodate incremental operational software deliveries
(U) \$700	TSWFM: Developed software for fine scale target forecasting in response to Combat Mission Needs Statement #98-008.
(U) \$9,846	Total

(U) **FY 2000 (\$ in Thousands)**

(U) \$500	TWR: SPO support and continue development of system interfaces with Forecast and Analysis systems (Weather Data Collection)
(U) \$1,127	MOC OS-21: Prepare Milestones I/II/III documentation, achieve Milestones I/II/III, and begin integration and development of component sensor systems (Weather Data Collection)
(U) \$1,700	WDA [formerly SDHS II]: Achieve Milestones I/II/III and begin operational software development for enhanced analysis infrastructure (Analysis)
(U) \$3,394	CDFS II: Continue development of cloud depiction and forecast software (Weather Forecasting)
(U) \$2,246	GTWAPS: Continue operational software development for incremental IOC's (Weather Forecasting)
(U) \$6,818	SWAFS: Achieve Milestones I/II and possibly III and begin software development for incremental deliveries (Weather Forecasting)
(U) \$3,125	MOC FS-21: Complete Milestones I/II/III documentation, achieve Milestones I/II/III, and award a contract for FS-21 procurement and software integration (Product Tailoring/Warfighter Applications)
(U) \$18,910	Total

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(U) <u>A. Mission Description Continued</u>				
(U) <u>FY 2001 (\$ in Thousands)</u>				
(U) \$400	TWR: SPO support and continue development of system interfaces with Forecast and Analysis systems (Weather Data Collection)			
(U) \$4,366	MOC OS-21: Continue development and integration of component sensor systems (Weather Data Collection)			
(U) \$3,480	WDA: Continue software development for enhanced analysis infrastructure (Analysis)			
(U) \$996	CDFS II: Continue development of cloud depiction and forecast software and achieve FOC (Weather Forecasting)			
(U) \$4,581	SWAFS: Continue software development for incremental deliveries (Weather Forecasting)			
(U) \$3,238	MOC FS-21: Continue software development and integration with regional and tactical weather systems (Product Tailoring/Warfighter Applications)			
(U) \$2,881	STT: Continue development of software for integration of satellite weather data in tactical environment. (Weather Data Collection)			
(U) \$19,942	Total			
(U) <u>B. Budget Activity Justification</u>				
This effort is in Budget Activity 7, Operational System Development, because it supports operational software development and system tests associated with the upgrade and replacement of currently operational systems, systems already in production, and systems with approved production funds in the DoD budget.				
(U) <u>C. Program Change Summary (\$ in Thousands)</u>				
	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Total Cost</u>
(U) Previous President's Budget (FY 2000 PBR)	10,398	19,069	15,089	TBD
(U) Appropriated Value	10,649	19,069		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-251	-55		
b. Small Business Innovative Research	-340			
c. Omnibus or Other Above Threshold Reprogram		-104		
d. Below Threshold Reprogram	-157			
e. Rescissions	-55			
f. Other				
(U) Adjustments to Budget Years Since FY 2000 PBR			4,853	TBD
(U) Current Budget Submit/FY 2001 PBR	9,846	18,910	19,942	TBD
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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

07 - Operational System Development

0305111F Weather Service

672738

(U) **C. Program Change Summary (\$ in Thousands) Continued**(U) **Significant Program Changes:**

FY01: \$2,090K transferred from SWAFS other procurement - AF to RDT&E.

\$2,941K transferred from PE35160F to support STT.

(U) **D. Other Program Funding Summary (\$ in Thousands)**

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(U) Other Procurement, AF, Weather Service (PE35111F WSC 833070)	47,949	41,850	48,599	48,125	45,084	45,409	46,572	Continuing	TBD

(U) **E. Acquisition Strategy**

All major contracts within this program used precompeted DoD contract vehicles or were awarded after full and open competition. Programs support DII COE compliance and use an evolutionary acquisition strategy with a series of incremental IOCs and software releases. This approach accommodates refinement and prioritization of user requirements and improves adaptability to evolving commercial activities.

(U) **F. Schedule Profile**

	<u>FY 1999</u>				<u>FY 2000</u>				<u>FY 2001</u>			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) CDFS II FOC									X			
(U) SWAFS Milestones I/II and possibly III						X						
(U) MOC FS-21 Milestones I/II/III						X						
(U) MOC OS-21 Milestones I/II/III						X						
(U) SDHS II/WDA Milestones I/II/III							X					

X - Denotes planned event

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2000								
BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT							
07 - Operational System Development				0305111F Weather Service				672738							
(U) A. Project Cost Breakdown (\$ in Thousands)															
						FY 1999			FY 2000	FY 2001					
(U) 1st Article Development						0			1,205	0					
(U) System Software Integration						202			1,444	2,767					
(U) System Engineering Support						1,621			2,484	5,778					
(U) Contractor Engineering Support						999			2,591	2,715					
(U) Software Development						5,873			9,770	7,498					
(U) Travel						213			300	317					
(U) Program Management Support						938			1,016	867					
(U) Laboratory Support						0			100	0					
(U) Total						9,846			18,910	19,942					
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)															
(U) Performing Organizations:															
Contractor or Government		Contract Method/Type or Funding Vehicle		Award or Obligation Date		Performing Activity EAC		Project Office EAC		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
Product Development Organizations															
Phillips Lab		MIPR		May 94		270		270		270				0	270
CalTech		LOE		Jun 94		1,172		1,172		1,172				0	1,172
CSC		LOE		Jan 94		2,127		2,127		2,127				0	2,127
GTE		FFP/PR		Oct 90		13,064		13,064		13,064				0	13,064
PRISM(Raytheon)		LOE		Jan 93		3,497		3,497		3,497				0	3,497
PRISM (Hughes)		LOE		Jan 93		3,396		3,396		3,396				0	3,396
Sterling		CPAF		Jun 95		21,621		21,621		13,309	5,094	2,800	742	0	21,945
Air Weather Svc (CDFS II related work)		MIPR		4FY95		2,900		2,900		2,900				0	2,900
Hughes				Sep 95		1,682		1,682		1,682				0	1,682
DNA		MIPR		Jan 95		100		100		100				0	100
CCPL (TRW) [GTWAPS]		LOE		Dec 97		3,986		3,986		2,023	1,597	996	0	Continuing	TBD
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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)								DATE February 2000		
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(U) <u>Performing Organizations Continued:</u>										
<u>Product Development Organizations</u>										
Raytheon	MIPR	Sep 98	1,184	1,184	232	250	415	351	0	1,248
TBD MOC FS-21	TBD	TBD	TBD	TBD	0	0	1,842	2,143	Continuing	TBD
TBD MOC OS-21	TBD	TBD	TBD	TBD	0	0	700	3,279	Continuing	TBD
TBD SDHS II/WDA	TBD	TBD	TBD	TBD	0	0	1,073	2,141	Continuing	TBD
TASC	LOE	Sep 99	741	741	0	741	0	0	0	741
CCPL (TRW) [SWAFS]	LOE	Dec 99	4,780	4,780	0	0	4,780	0	0	4,780
TBD SWAFS	TBD	TBD	TBD	TBD	0	14	2,176	4,269	Continuing	TBD
TBD STT*	TBD	TBD	TBD	TBD	0	0	0	2,881	Continuing	TBD
*Note: prior to FY01, STT in PE 35160F.										
<u>Support and Management Organizations</u>										
Electronic Systems Center (ESC)					824	900	1,072	835	Continuing	TBD
Space and Missile Systems Center (SMC)					40	188	172	204	Continuing	TBD
MITRE/ Aerospace/ITSP					2,151	1,062	2,884	3,097	Continuing	TBD
<u>Test and Evaluation Organizations</u>										
					<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Subtotals</u>					<u>to FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Complete</u>	<u>Program</u>
Subtotal Product Development					43,772	7,696	14,782	15,806	TBD	TBD
Subtotal Support and Management					3,015	2,150	4,128	4,136	TBD	TBD
Subtotal Test and Evaluation										
Total Project					46,787	9,846	18,910	19,942	TBD	TBD

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